



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/000,123	12/04/2001	Chiaki Goto	Q66564	8466

7590 11/21/2003

SUGHRUE, MION, ZINN,
MACPEAK & SEAS, PLLC
2100 Pennsylvania Avenue, N.W.
Washington, DC 20037-3202

EXAMINER

AL NAZER, LEITH A

ART UNIT	PAPER NUMBER
----------	--------------

2828

DATE MAILED: 11/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

CA

Office Action Summary

Application No.

10/000,123

Applicant(s)

GOTO, CHIAKI

Examiner

Leith A Al-Nazer

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,6-8,10-15,17-21 and 23-36 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

- 5) ☐ Claim(s) _____ is/are allowed.

- 6) ☒ Claim(s) 1-4,6-8,10-15,17-21 and 23-36 is/are rejected.

- 7) ☐ Claim(s) _____ is/are objected to.

- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.



PAUL IP

SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Double Patenting

1. Applicant is advised that should claim 10 be found allowable, claim 11 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

2. Applicant is advised that should claim 12 be found allowable, claim 13 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 2828

4. Claims 1, 3, 4, 7, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Verdiell et al '417.

With respect to claim 1, Verdiell teaches a semiconductor light-emitting device (10); an external resonator including a wavelength selector (22); a stripe (38) formed in the semiconductor light emitting device so that it is oblique to one end facet (figure 2); and one end facet of the semiconductor device having an antireflective coating (AR in figure 2); wherein an optical waveguide device (40) is coupled to the semiconductor light-emitting device (32) or waveguide selector; the wavelength selector (43) having a function of returning the wavelength-selected light to the semiconductor light-emitting device and is disposed on one side of the semiconductor light-emitting device; the optical waveguide device being disposed on the other side of the semiconductor light-emitting device; and the external resonator being constituted by an end facet (34), on the opposite side from the semiconductor light-emitting device, of the optical waveguide device, and the wavelength selector.

With respect to claim 3, Verdiell teaches the wavelength selector having a function of returning the wavelength-selected light to the semiconductor light-emitting device; and the external resonator being constituted by the wavelength selector (43) and an end facet (34), on the opposite side from the wavelength selector, of the semiconductor light-emitting device (figure 2).

With respect to claim 4, Verdiell teaches the stripe having a bent portion and being formed perpendicular to the end facet, on the opposite side from the wavelength selector, of the semiconductor light-emitting device (figure 2).

With respect to claims 7 and 8, Verdiell teaches an optical waveguide device (40) being coupled to the semiconductor light-emitting device or wavelength selector.

5. Claims 1, 3, 4, 7, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Hamakawa et al '692.

With respect to claim 1, Hamakawa teaches a semiconductor light-emitting device; an external resonator including a wavelength selector (B in figure 4); a stripe formed in the semiconductor light emitting device so that it is oblique to one end facet (column 3, lines 53-63); and one end facet of the semiconductor device having an antireflective coating (column 2, lines 25-50); wherein an optical waveguide device (23) is coupled to the semiconductor light-emitting device (1) or waveguide selector; the wavelength selector (21) having a function of returning the wavelength-selected light to the semiconductor light-emitting device and is disposed on one side of the semiconductor light-emitting device; the optical waveguide device being disposed on the other side of the semiconductor light-emitting device; and the external resonator being constituted by an end facet (120), on the opposite side from the semiconductor light-emitting device, of the optical waveguide device, and the wavelength selector.

With respect to claim 3, Hamakawa teaches the wavelength selector having a function of returning the wavelength-selected light to the semiconductor light-emitting device; and the external resonator being constituted by the wavelength selector (21) and an end facet (12), on the opposite side from the wavelength selector, of the semiconductor light-emitting device (figures 4-7).

With respect to claim 4, Hamakawa teaches the stripe having a bent portion and being formed perpendicular to the end facet, on the opposite side from the wavelength selector, of the semiconductor light-emitting device (figure 4).

Art Unit: 2828

With respect to claims 7 and 8, Hamakawa teaches an optical waveguide device (250) being coupled to the semiconductor light-emitting device or wavelength selector.

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 2, 6, 10-15, 17-21, 23-29, and 33, are rejected under 35 U.S.C. 102(b) as being anticipated by Kawai et al '138.

With respect to claims 1, 10-14, and 33, Kawai teaches a semiconductor light-emitting device; an external resonator including a wavelength selector (122-1 and 122-2); a stripe formed in the semiconductor light emitting device so that it is oblique to one end facet (figure 12); and one end facet of the semiconductor device having an antireflective coating (column 3, lines 55-60); wherein an optical waveguide device (110/120) is coupled to the semiconductor light-emitting device or waveguide selector; the wavelength selector (122-1 or 122-2) having a function of returning the wavelength-selected light to the semiconductor light-emitting device and is disposed on one side of the semiconductor light-emitting device (100); the optical waveguide device (110/120) being disposed on the other side of the semiconductor light-emitting device; and the external resonator being constituted by an end facet, on the opposite side from

Art Unit: 2828

the semiconductor light-emitting device, of the optical waveguide device, and the wavelength selector (figure 12).

With respect to claim 2, Kawai teaches two wavelength selectors disposed on both sides of the semiconductor light-emitting device (122-1 and 122-2 in figure 12).

With respect to claim 6, Kawai teaches an optical waveguide device (120) being coupled to the semiconductor light-emitting device or wavelength selector.

With respect to claims 15, 17, and 18, Kawai teaches the optical waveguide device (110) being disposed in the external resonator, which is defined by gratings 122-1 and 122-2.

With respect to claim 19, Kawai teaches an end facet of the optical waveguide device that constitutes the external resonator being cut perpendicular to a direction where an optical waveguide of the optical waveguide device extends (figure 9A).

With respect to claim 20, Kawai teaches an end facet of the optical waveguide device that does not constitute the external resonator is cut oblique to a direction where an optical waveguide of the optical waveguide device extends (figure 12).

With respect to claims 21 and 23-27, Kawai teaches the optical waveguide being coupled directly to the semiconductor light-emitting device or wavelength selector (figures 2A and 2B).

With respect to claim 28, Kawai teaches the wavelength selector being a waveguide type wavelength selector having a reflection Bragg grating (122-1 and 122-2) in an optical waveguide portion (120).

With respect to claim 29, Kawai teaches the wavelength selector and the semiconductor light-emitting device being coupled directly with each other (figure 12).

Art Unit: 2828

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 30, 34, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawai et al '138 in view of prior art figure 17 and the prior art disclosure.

With respect to claims 30, 34, and 36, the prior art disclosure teaches an external resonator being constituted by a mirror (page 1, lines 18-23), and a wavelength selector comprising a narrow-band pass filter (page 1, lines 15-18). At the time of the invention, it would have been obvious to one having ordinary skill in the art to include a mirror to constitute the external resonator, and a wavelength selector comprising a narrow-band pass filter. The motivation for doing so would have been to resonate a desired light frequency within a resonant cavity.

11. Claims 31 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawai et al '138 in view of Suzuki '264 or Yokogawa '078.

With respect to claims 31 and 35, Kawai teaches a semiconductor light-emitting device for emitting light (100); an external resonator including a wavelength selector which selects a wavelength of the light (figure 12); wherein a stripe is formed in the semiconductor light-emitting device so that it is oblique to one end facet, which does not constitute the external resonator, of the two cleaved end facets of the semiconductor light-emitting device (figure 12); and the one end facet of the semiconductor light-emitting device having a coating which becomes an antireflection coating with respect to the selected wavelength (column 3, lines 55-60). Claims 31 and 35 require a drive circuit that drives the semiconductor light-emitting device with high-frequency superposition. Driving a laser with high frequency superposition is well-known in the art, as is evidenced by Yokogawa (column 2, lines 7-25) and Suzuki (column 4, lines 8-15). At the time of the invention, it would have been obvious to one having ordinary skill in the art to combine the system of Kawai with the high frequency superposition driver of Yokogawa or Suzuki. The motivation for doing so would have been to obtain a driver capable of pumping the active medium to a desired energy level.

12. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawai et al '138 in view of prior art figure 17 and the prior art disclosure as applied to claims 30, 34, and 36 above, and further in view of Suzuki '264 or Yokogawa '078.

Art Unit: 2828

Claim 32 requires a drive circuit that drives the semiconductor light-emitting device with high-frequency superposition. Driving a laser with high frequency superposition is well-known in the art, as is evidenced by Yokogawa (column 2, lines 7-25) and Suzuki (column 4, lines 8-15). At the time of the invention, it would have been obvious to one having ordinary skill in the art to combine the system of Kawai with the high frequency superposition driver of Yokogawa or Suzuki. The motivation for doing so would have been to obtain a driver capable of pumping the active medium to a desired energy level.

Response to Arguments

13. Applicant's arguments filed October 7, 2003 have been fully considered but they are not persuasive.

Applicant argues that "Kawai does not disclose or suggest that an end facet of the optical waveguide 110 constitutes one end of a resonator." Examiner disagrees. Kawai teaches an optical fiber 120 attached to the tapered optical waveguide 110. It is the Examiner's opinion that optical fiber 120 constitutes an optical waveguide since its purpose is to transport or guide light. The fiber gratings 122-1 and 122-2 constitute ends of the optical resonator just as fiber gratings 23 and 123 constitute ends of the external resonator in the present application. Therefore, Examiner believes that Kawai does disclose that an end facet (122-1 or 122-2) of the optical waveguide (110/120) constitutes one end of the resonator.

Art Unit: 2828

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Communication Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leith A Al-Nazer whose telephone number is 703-305-2717. The examiner can normally be reached on Monday-Friday 7:30am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on 703-308-3098. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-3329.


PAUL IP

SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

Application/Control Number: 10/000,123

Page 11

Art Unit: 2828

LA